

Comparison of susceptibility test methods to detect penicillin susceptibility in *Streptococcus pneumoniae* isolates

ABSTRACT

The increasing prevalence of penicillin-resistant *Streptococcus pneumoniae* urges for fast and accurate susceptibility testing methods. This study evaluated the comparability of three commonly used techniques; disk diffusion, E-test and agar dilution, to detect penicillin susceptibility in clinical isolates of *S. pneumoniae*. Fifty pneumococcal isolates, obtained from patients at the University of Malaya Medical Centre, were selected to include both penicillin-susceptible strains and those that had decreased susceptibility (resistant and intermediate) to penicillin. The minimum inhibitory concentration (MIC) values of penicillin to serve as the reference was determined by the agar dilution method in which, based on the MIC breakpoints recommended by the National Committee for Clinical Laboratory Standards (NCCLS), 27 strains had decreased susceptibility to penicillin with 17 strains resistant and 10 intermediate. Comparing to the agar dilution method, oxacillin disk diffusion test detected all strains with decreased penicillin susceptibility as such while E-test showed a close agreement of susceptibility (92%) of the isolates to penicillin. This confirmed that oxacillin is a good screening test for *S. pneumoniae* isolates with decreased susceptibility to penicillin while E-test is very reliable for rapid and accurate detection of penicillin susceptibility.

Keyword: Agar dilution; E-test; MIC; Oxacillin disk diffusion; Penicillin; *Streptococcus pneumoniae*